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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/682,223	10/09/2003	Mark A. Schubert	SP-1665.1 US	8111

20875 7590 03/30/2009

MICHAEL C. POPHAL
EVEREADY BATTERY COMPANY INC
25225 DETROIT ROAD
P O BOX 450777
WESTLAKE, OH 44145

EXAMINER	
CHU, HELEN OK	

ART UNIT	PAPER NUMBER
1795	

MAIL DATE	DELIVERY MODE
03/30/2009	PAPER

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/682,223
Filing Date: October 09, 2003
Appellant(s): SCHUBERT ET AL.

EXAMINER'S ANSWER

This is in response to the appeal brief filed 12/23/08 appealing from the Office action mailed 9/23/08.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

WITHDRAWN REJECTIONS

The following grounds of rejection are not presented for review on appeal because they have been withdrawn by the examiner. The rejections under 35 U.S.C 102(e), on claims 1, 2, 6-9, 11, 12 as anticipated by Shubert et al. (US Publication 2003/0118902 A1) are withdrawn herein.

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(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

4,592,970	Zupancic	06-1986
6468691	Malay et al.	10-2002
4,580,790	Doose	04-1986
4,592,970	Yoshinaka	0-000
4,,482,613	Turchane et al.	0-0000

(9) Grounds of Rejection

Claims 1-15, 18, 20-22 are rejected under 35 U.S.C. 103(a) as unpatentable over Zupancic (US Patent 4,592, 970) in view of Malay et al. (US Patent 6,468,691) in further view of Doose (U.S. Patent 4,580,790).

Regarding claims 1-5 and 18, 20, 21, the Zupancic reference discloses an electrochemical cell with a metal container which includes a lid can be stainless steel (Col. 7, Li 35-40). The electrochemical cell has a positive electrode, negative electrode, a separator dispose in between and electrolyte (Col. 8, Li 15-67). The Zupancic reference further discloses a pressure relief vent member with orifice, a corrosion-resistant polytetrafluoroethylene liner in which a ball (Applicant's plug) is placed and sealant in between the liner and orifice (Abstract, Applicants first thermoplastic seal member) which seals an aperture within the container and the cover (Fig. 1). The Zupancic reference discloses that the sealant is made of a chlorotrifluoroethylene resin (Col. 4, li 1-5). The sealant is

disposed between the walls of the orifice and liner to prevent leakage of the electrolyte at the interface (Col. 3, li 60-68). Many electrolyte have a prosperity for creepage along component parts of cells and eventually finds a path outside of the cell (Col. 3, lines 60-68).The Malay et al. reference discloses a problem arises with electrochemical cells where electrolyte have a high affinity for wetting metal surfaces and are known to creep through the sealed surfaces of an electrochemical cell (Col. 1, lines 20-30) Leakage in this manner can also cause a corrosive deposit on the surface of the cell. To obviate this problem an improved compressible sealing member is provided (Col. 10-20). The member as disclosed by the Malay reference comprises a polymeric material such polytetrafluoroethylene, fluorinated-ethylene polypropylene, chlorotrifluoroethylene, polyvinyls and can also include a filler made of glass (Applicant's thermal-stabilizing filler) to modify the sealing properties of the sealing member (Col. 7, lines 25-40) such capabilities of withstanding pressure forces of 2000 -3000 psi. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a sealing gasket/member with improved compressibility as disclosed by the Malay reference into the vent member as disclosed by the Zupancic reference in order to prevent electrolyte and corrosion improving the overall marketability and effectiveness of the electrochemical cell. Additionally, the substitution of known equivalent structures such as polytetrafluoroethylene and chlorotrifluoroethylene involves only ordinary skill in the art. *In re Fout* 213 USPQ 532 (CCPA 1982); *In re Susi* 169 USPQ 423 (CCPA 1971); *In re Siebentritt* 152 USPQ 618 (CCPA

1967); In re Ruff 118 USPQ 343 (CCPA 1958). When a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result. **KSR v. Teleflex.** The Zupancic and the Malay reference do not disclose a thermal-stabilizing filler material of more than 10 weight percent. However, the Doose reference discloses seals comprising polytetrafluoroethylene and15% to 25% E-glass filler are capable of withstanding pressure forces of 2800 psi. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate 15% to 25% of E-glass as disclosed by the Doose reference into sealing gasket comprising polytetrafluoroethylene or chlorotrifluoroethylene as the glass filler material in order to have a sealing gasket with sufficient pressure strengths as disclosed by the Malay reference to withstand electrolyte creepage and reducing corrosion of the electrochemical cell as disclosed by the Zupancic reference.

Regarding claim 6, the Zupancic reference discloses a second sealant material made of chlorotrifluoroethylene disposed within the tubular member over the force-fitted member and the area of the housing defining the vent orifice surrounded by the tubular member.

Regarding claims 7-9, 11, the Zupancic reference discloses a pressure relief vent member with orifice, a corrosion-resistant polytetrafluoroethylene liner in which a ball (Applicant's plug) is placed and sealant in between the liner and orifice (Abstract, Applicants first thermoplastic seal member) which seals an aperture within the container and the cover comprises a hollow cylindrical shape.

Regarding claim 10, the Zupancic reference discloses the ball of the pressure relief vent is made of glass (Col. 5, lines 15-20)

Regarding claims 12 and 13, the Zupancic reference discloses a nonaqueous electrolytic solute in the electrochemical cell which is organic (Col. 6, Lines 50-60).

Regarding claims 14 and 15, the Zupancic reference discloses the preferred anode material is lithium (Col. 6, Lines 5-15) and MnO_2 or iron disulfide cells (Col. 7, 50-60).

Regarding claim 22, the Zupancic reference discloses the liner of the vent member is compressed from 20-40 percent (Col. 5 lines10-20). The reference further discloses the thickness of the liner to be 0.023 inches thick which is not between 0.006 and 0.015 thick as recited in the claimed recitation, however, it would have been obvious matter of design choice to change (some kind of size), since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art *(MPEP 2144.04 (IV))*.

It is noted that claims 22 are product-by-process claims. "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F. 2d 695, 698, 227 USPQ 964, 966 (Fed.

Cir. 1985). Since product is similar to that of the Applicant's, Applicant's process is not given patentable weight in this claim.

Claims 16, 17 and 23 are rejected under 35 U.S.C. 103(a) as unpatentable over Zupancic (US Patent 4,592, 970) in view of Malay et al. (US Patent 6,468,691) in further view of Doose (U.S. Patent 4,580,790) in further view of Turchan et al. (U.S. Patent 4,482,613.

The Zupancic in view of Malay et al. in further view of Doose discloses the claimed invention above and further discloses herein. However, the Zupancic in view of Malay et al. in further view of Doose does not disclose an organic solvent comprises at least 80 volume percent of one or more ethers having a boiling point not greater than 90 degrees Celsius. However, the Turchan et al. reference discloses a Li/MnO.sub.2 cell, having a safety pressure vent and an organic electrolyte solvent is enhanced by, in conjunction with said vent, providing said organic electrolyte solvent with at least 80% by volume of a volatile component, such as dimethoxyethane, is preferably below 90 .degree. C. (Col. 1, lines 45-55) Upon cell venting, under abuse conditions, the cell is thereby rapidly evacuated and safely rendered inoperable under further abuse conditions. Therefore, it would been obvious to incorporate an organic electrolyte solvent of 80% or more with a boiling point of below 90 degrees Celsius as disclosed by Turchan et al. reference in the Li/MnO_2 electrochemical cell with a pressure safety vent as disclosed by Zupancic in view of Malay et al. in further view of Doose in order to prevent any conditions which would attributed to the fact that upon cell venting at an elevated temperature and

pressure the volatile electrolyte solvent is sufficiently vaporized to be rapidly evacuated from the cell during venting in order to cause cell operation is therefore safely substantially shut down within a short period of time after venting.

Claims 19, 24 and 25, are rejected under 35 U.S.C. 103(a) as unpatentable over Zupancic (US Patent 4,592, 970) in view of Malay et al. (US Patent 6,468,691) in further view of Doose (U.S. Patent 4,580,790) in further view of Yoshinaka et al. (US Patent 5,183,594)

The Zupancic in view of Malay et al. in further view of Doose discloses the claimed invention above and further discloses herein but does not specifically state an ethylene-polytetrafluoroethylene, however, the Yoshinaka et al. reference discloses thermoplastic resins includes compounds such ethylene/tetrafluoroethylene and TEFLON (polytetrafluoroethylene. The substitution of known equivalent structures such as polytetrafluoroethylene and chlorotrifluoroethylene involves only ordinary skill in the art. *In re Fout* 213 USPQ 532 (CCPA 1982); *In re Susi* 169 USPQ 423 (CCPA 1971); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); In re Ruff 118 USPQ 343 (CCPA 1958). When a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result. **KSR v. Teleflex**

(10) Response to Argument

The rejections under 35 U.S.C 102(e), on claims 1, 2, 6-9, 11, 12 as anticipated by Shubert et al. (US Publication 2003/0118902 A1) are withdrawn herein and therefore, the Applicants' arguments regarding Shubert are moot.

Please note, the rejections above were clarified for further understanding. No new rejection was made.

In summary, the Zupancic reference discloses the claimed invention including a container having an open end closed by a cover (3:20-25). The cover and container can be stainless steel. A corrosion resistant polytetrafluoroethylene liner in which a ball is placed and sealant in between the liner and orifice (Applicant's first thermoplastic seal member), altogether, seals the aperture within the container and the cover. The liner, orifice and sealant configuration is to prevent electrolyte creepage (Col. 3, li 5-15; col. 3-4, 65-5; col. 9, li 45-51; col. 65-59). The Malay et al. reference also discloses the same problem with electrolyte creepage. In order to obviate electrolyte creepage, the Malay et al. reference discloses a broad teaching of the seal member having to withstand pressures of 2000-3000 psi for compressibility. Some seal members as disclosed by Malay et al. are made of PTFE or chlorotrifluoroethylene comprising glass fillers (Applicants' thermo-stabilizer filler). Therefore it would have been obvious to one skilled in the art at the time the invention was made to incorporate the sealing member with improved compressibility as disclosed by Malay reference into the vent sealing member as disclosed by Zupancic reference in order to prevent electrolyte creepage and corrosion recognized by both references. The improvement would provide overall marketability and effectiveness of

electrochemical cells. The Zupancic and Malay et al. reference does not teach more than 10% thermal-stabilizer filler (though the Malay et al. reference does teach glass fillers in PTFE or CTFE). The Doose reference discloses seal members comprising PTFE or chlorotrifluoroethylene and 15-25% E-Glass capable of withstanding pressure forces of 2800psi. Therefore, it would have been obvious to one of ordinary skill in the art to include 15-25% E-glass into a sealing member of PTFE or CTFE in order to have sealing gaskets to withstand sufficient pressure as disclosed by Malay to prevent electrolyte creepage and corrosion reduction as disclosed by both Zupancic and Malay for the sealing member of Zupancic.

B. Rejection of Claims 1-25

The Applicants argue, "*The MPEP sets forth the standard for obviousness and requires some suggestion or motivation, either in the references themselves, or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. MPEP § 2143. The combination of prior art references must have been "obvious to a person of ordinary skill in the art." KSR Int'l Co. v. Teleflex Inc., 127 S. Ct. 1727, 1741 (2007). In order to establish a prima facie case of obviousness, there must be some apparent reason why a person of ordinary skill in the art would combine the references, and the analysis should be made explicit. Id*" However, the motivation used to combine Zupancic and Malay was stated in Page 5, line 10-14 of Final Office Action dated 9/23/08, " *Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a*

sealing gasket with improved compressibility as disclosed by the Malay reference into the vent member as disclosed by the Zupancic reference in order to prevent electrolyte and corrosion improving the overall marketability and effectiveness of the electrochemical cell." When using KSR Int'l Co v. Teleflex Inc. in Page 5, line 15-22 , the rejection is for claim 18. Claim 18 specifically recites chlorotrifluoroethylene, fluorinated-ethylene polypropylene, polyvinyls. The Zupancic discloses PTFE as the sealing member, and Malay et al. relates PTFE with chlorotrifluoroethylene, fluorinated-ethylene polypropylene, polyvinyls for resins used as thermoplastic equivalents for sealing member.

Applicants argue, "*All of the Examiner's obviousness-based rejections are primarily based on a combination of Zupancic, Malay and Doose. In the Examiner's opinion, one of ordinary skill in the art would have combined the electrochemical cell taught in Zupancic with the seal comprising polytetrafluoroethylene (PTFE) and 15-25% E-glass filler disclosed in Doose, for the problem disclosed in Malay*" However, this is not true and the Applicants incorrectly read the rejection. The problem with electrolyte creepage is disclosed in both Zupancic and Malay. The Zupancic reference discloses and stated on Page 4, last two lines of Final Office Action dated 9/23/08 (herein disclosed as FOA) "*Many electrolyte have a prosperity for creepage along component parts of cells and eventually finds a path outside of the cell (Col. 3, Lines 60-68).*" The Malay et al. reference discloses the same problem with electrolyte creepage. Page 5, lines 1-4 of FOA states, "*The Malay et al. reference discloses a problem arises with electrochemical cells where electrolyte have a high affinity for wetting*

metal surfaces and are known to creep through the sealed surfaces of an electrochemical cell (Col. 1, lines 20-30) Leakage in this manner can also cause a corrosive deposit on the surface of the cell." Therefore, the Malay et al. and the Zupancic reference disclose the same problem with electrolyte creepage. Again, it would be known to one of ordinary skill in the electrolyte creepage art to modify the teachings of the Zupancic reference for the sealing member of the electrochemical cell in combination of the teachings of the Malay et al. reference of the sealing member of the electrochemical cell to solve the problem for electrolyte creepage.

The Applicant's argue, "*The only reference that the Examiner cites for teaching the "more than 10 weight percent thermal-stabilizing filler" limitation is Doose, which relates to reciprocating and/or rotating surfaces, particularly for rotating shafts and rider rings for use in sealing reciprocating pistons such as those commonly found in pumps, compressors, and a bearing pads used to support bridges and high rise buildings. (Doose, col. 1 11. 14-29). Based on Appellants' review of Doose, Appellants are unable to find any reference indicating or even suggesting that the teachings of Doose would be applicable to an electrochemical cell.*" However, the Examiner recognizes that the Doose reference does not disclose an electrochemical cell, otherwise the rejection would have been made under 35 U.S.C 102(b) as anticipated under Doose alone. However, this is not the case. The Doose reference discloses a sealing member having PTFE and 15-25% inorganic glass fillers which having tensile strength of 2000-3000 psi as required by the Malay et al. reference. The Malay et

al. discloses the sealing member have to be capable of compressive forces between 2000-3000 psi. The sealing members that have these compressive properties are compounds made of inorganic glass fillers in polymeric resins in order to solve electrolyte creepage in electrochemical cells. The Zupancic discloses electrolyte creepage and discloses sealing members made of PTFE.

The Applicants argue, "*Moreover, Appellants assert that one of ordinary skill in the art would not have combined Zupancic with Doose for an additional reason. Each of the claims requires that the seal member provide a pressure relief from the cell to allow it to vent. Zupancic teaches that the liner and seal member are "resiliently deformable such that said member is adapted to be at least partially expelled from the vent orifice upon a predetermined internal gas pressure buildup within the cell to provide a permanent vent for the cell." (Zupancic, col. 3 11. 28-35 (emphasis added)). In contrast, Doose teaches that the purpose of incorporating filler in the PTFE is to "prevent the PTFE from becoming deformed during continued use." (Doose, col. 1 11. 37-39 (emphasis added)). Since the prevention of deformation is contrary to venting, which essentially involves deformation of the seal, the Examiner's proposed modification of the references would render the prior art unsatisfactory for its intended purpose. MPEP § 2143.01(V). Accordingly, Appellants submit that one of ordinary skill in the art would not have combined the Doose seal, which prevents the PTFE from deforming, with the Zupancic cell, which needs to deform the seal to vent, to arrive at the claimed invention.*" However, as explained by the Examiner in the FOA of Page 13 first paragraph, the recitation

using "deformable" or "deformed" are relative terms. Because Zupancic reference does not define what is meant by "deformable" with values, numbers, or with physical properties, the definition of "deform" may be relative. One of ordinary skill in the art only understands by reading Zupancic, that the term "deformable" may correlate to physical properties of material used. The material used to make the liner is PTFE. The Doose reference discloses in Table II of PTFE (Teflon) for tensile strength physical properties. The Doose reference discloses that the tensile strength of pure PTFE is 3500 psi before it breaks. Therefore, one of ordinary skill in the art can correlated pure PTFE has tensile strength of 3500 psi, or by definition of "deformable" as described by Zupancic have deformation properties of 3500 psi or more. The Doose reference also discloses in Table II, PTFE with E-glass having tensile strength less than PTFE alone and therefore more deformable than PTFE. Therefore, by Zupancic's standards PTFE with E-glass is more "deformable" than PTFE alone. Therefore the Doose reference can be combined to the Zupancic reference. Furthermore, the Examiner emphasizes that the rejection is not made under Zupancic in view of Doose but Zupancic in view of Malay in view of Doose which is a different rejection. Essential elements from Malay which was used in the rejection to correlated Doose and Zupancic are conveniently missing in Applicants arguments.

C. **Rejection of Claim 5 and 21**

The Applicants argue, "*Claims 5 and 21 both require the thermal-stabilizing filler to comprise E-glass. The Examiner rejected claims 5 and 21 as*

obvious based on the combination of Zupancic, Malay and Doose. In the Examiner's opinion, it would have been obvious to one of ordinary skill in the art to incorporate 15 % to 25% E-glass as disclosed by Doose into the electrochemical cell taught in Zupancic, for the problem disclosed in Malay" Again, this is not true and the Applicants incorrectly read the rejection. The problem with electrolyte creepage is disclosed in both Zupancic and Malay. The Zupancic reference discloses and stated on Page 4, last two lines of FOA "*Many electrolyte have a propensity for creepage along component parts of cells and eventually finds a path outside of the cell (Col. 3, Lines 60-68).*" The Malay et al. reference discloses the same problem with electrolyte creepage. Page 5, lines 1-4 of FOA states, "*The Malay et al. reference discloses a problem arises with electrochemical cells where electrolyte have a high affinity for wetting metal surfaces and are known to creep through the sealed surfaces of an electrochemical cell (Col. 1, lines 20-30) Leakage in this manner can also cause a corrosive deposit on the surface of the cell.*" Therefore, the Malay et al. and the Zupancic reference disclose the same problem with electrolyte creepage. Again, it would be known to one of ordinary skill in the electrolyte creepage art to modify the teachings of the Zupancic reference for the sealing member of the electrochemical cell in combination of the teachings of the Malay et al. reference of the sealing member of the electrochemical cell to solve the problem for electrolyte creepage.

The Applicants argue, "*The Examiner stated that Doose discloses seals comprising PFTE and 15-25% E-glass filler. (Office Action, p. 6). However, a*

careful review of Doose shows that Doose actually teaches away from utilizing E-Glass since it states…

After considering the disclosure of Doose in its entirety, including the portions which teach away from the claimed invention, Appellants respectfully submit that one having ordinary skill in the art would have been discouraged from incorporating E-glass as a filler into the electrochemical cell of Zupancic to arrive at the claimed invention" Again, the Examiner emphasizes the rejection is not made under Zupancic in view of Doose but Zupancic in view of Malay in view of Doose which is a different rejection. Essential elements from Malay which was used in the rejection to correlated Doose and Zupancic are conveniently missing in Applicants arguments. The sole teachings of Doose used in the rejection are the tensile strength physical properties of E-glass in PTFE. Table II illustrates the tensile properties of 15-25% E-glass has the tensile properties of 2200-2800 psi. The Doose reference discloses a sealing member having PTFE and 15-25% E-glass which has tensile strength of 2200-2800 psi as required by the Malay et al. reference. The Malay et al. discloses the sealing member have to be capable of compressive forces between 2000-3000 psi. The sealing members that have these compressive properties are compounds made of inorganic glass fillers in polymeric resins in order to solve electrolyte creepage in electrochemical cells. The Zupancic discloses electrolyte creepage and discloses sealing members made of PTFE.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

Conclusion

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Helen O Chu/

Examiner, Art Unit 1795

Conferees:

/PATRICK RYAN/
Supervisory Patent Examiner, Art Unit 1795

/William Krynski/
Quality Assurance Specialist, TC 1700